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MR. R. G. HATFIELD, who died in Brooklyn last week after a short illness, was one of the best known and most respected architects of New York. He had for many years been treasurer of the American Institute of Architects, and since the withdrawal of Mr. Hunt had been the president of the New York Chapter of the Institute. He was also a member of the American Society of Civil Engineers. He was born in Elizabeth, New Jersey, in 1815, and his first training was as a carpenter and builder. Being a man of active mind and studious temper, he very soon set to work to qualify himself as an architect, carrying his studies, especially in the theory and technicalities of construction, farther than most of his fellow architects, so that he became known and consulted as one of the best qualified constructors in New York. He was the architect of many buildings, a few of which were churches, but the most were for offices, warehouses, and shops. Among the best known are the City Bank and the Seamen's Savings Bank in Wall Street, the Knickerbocker Insurance Company's building at the corner of Broadway and Park Place, and the building at Nos. 31 and 33 Broad Street, which was illustrated in the *American Architect* of January 6, 1877. He wrote and printed a number of papers and treatises on professional and kindred subjects. The earliest of these was "The American House Carpenter," published thirty years ago and more, which had, we believe, a considerable circulation. The most important is his work on The Theory of Transverse Strains and its Application in the Construction of Buildings, a model of its kind.[1] He wrote a number of papers for the meetings and conventions of the Institute, among them two for different conventions on fire-proof construction, and one on The Elementary Training of the Architect. The last thing from his pen is the paper on the Old Mill at Newport, in the current number of *Scribner's Magazine*.

MR. HATFIELD'S strength lay, as might be inferred from the bent of his writings, in his knowledge and skill as a constructor, although he was far from slighting either the practice or the study of the other parts of his profession. He was often consulted by his brother architects on difficult questions of construction, and in this way was employed to design the roof of the Grand Central Depot or railway station at New York, an arched iron roof of great span and great boldness of construction, the part of that building which does most credit to its designers, and which we have seen quoted very recently in a German architectural periodical. The thoroughness and accuracy of his work, and his clear sense of practical requirements, are well represented in his book on Transverse Strains. This is wrought out with a complete adaptation to its purpose which makes it the most suitable work of its kind for architectural constructors and students, and leads the reader of it to wish that the author had been able to complement it with another volume covering the rest of the statical problems that belong to building construction. He went so far as to construct and compute for the book twenty or more tables of strains, the results of his own experiments on the strength of various materials, for which he had provided an ingenious testing-machine of his own invention. The confidence inspired by these characteristics, as well as by knowledge of his unswerving integrity and judicial quality of mind, made him trusted as a referee or umpire, which he was often asked to be. After the expulsion of the famous New York "Ring" he was appointed by the reform controller, Mr. Green, to estimate the value of the work actually done on the new Court House. He was, as we have before mentioned, the architect on the committee of award for the tenement-house competition, the decision of which is interrupted by his death. He was one of the oldest members of the Institute, we think one of its founders, and his place in it will not be easily filled. His faithful and business-like discharge of the duties of its treasurer was invaluable to it, and his judicious counsel might, if it had been heeded, have saved it from some recent embarrassments. To his friends belongs the memory of a steadfast character and an unchanging personal kindliness; to his followers an example of unusual achievement, with far less advantages than belong to their time, an instance of an effort for thoroughness of qualification which the better opportunities of to-day have not yet made common.

[1] Reviewed in the *American Architect* for October 13, 1877.

THE article in *Scribner's Magazine*, which appeared on the very day of Mr. Hatfield's death, is an ingenious and interesting paper, in support of the theory of Professor Rafn of Copenhagen, and others, that the famous tower at Newport, R. I., commonly called the Old Mill, which has been a stumbling-block to antiquaries, is really the remains of a baptistery built by the Northmen in the tenth or eleventh century. He cites the conclusions of the later Danish investigators as to the establishment of the colony of Vinland in the beginning of the eleventh century, and its short existence. Then, having examined the undecisive traditions concerning the building and its own structure, and having concluded that neither give evidence that it was built in recent times, he finds its only counterparts among the buildings of the tenth and eleventh centuries. This so-called mill, as some of our readers are aware, is a low round tower, of rough rubble masonry, carried on eight arches, which rest on round piers. The whole tower is about twenty-four feet high and twenty-three feet across, its walls being two feet thick, and the piers three feet in diameter and ten high, with rough projections in lieu of capitals and bases. By the character of the masonry and the plan Mr. Hatfield supports the theory that it was one of the round baptisteries that were attached to very early churches; and from the fact that the piers, thicker than the walls they support, had their projection on the outside, he deduces the conclusion that it was a baptistery of the form of those at Bonn and Asti, and of many larger baptisteries or churches, — the well-known arrangement of a circular nave supported on open arches, surrounded by a circular aisle and carrying a clerestory. The projections of the piers beyond the wall they carry he judges to have been intended to support the lean-to roof of the encompassing aisle, and from certain patches of white plaster which still cling to the masonry he infers that the interior was finished in stucco, probably with moulded caps and bases to the piers, for which the rough projections which we now see furnished the corbelling. This theory, of which the last described development is Mr. Hatfield's own, we fancy, he supports by an accumulation of arguments from history, analogy, and construction, which give it a very fair appearance of probability. There is enough at least to warrant an investigation which might turn out to be a crucial test, — the digging for the foundation of the supposed aisle. If remains should be discovered under ground which should indicate that there had once been an outer wall encircling the tower, Mr. Hatfield's theory would have a very strong support.

THE legislature of Connecticut has hardly got settled in its new capitol before it finds itself in difficulty there. It is said that the piers which support the dome have suffered from unequal settlement, and that the granite facing the lower part is cracking badly. Apparently the cause of the trouble is the frailty that has beset builders from their earliest days, — the desire to get an effect of good work by making close joints where their masonry is seen, and taking less care of their work where it is out of sight. The habit of working the stones to a fair joint in the face of a wall or pier, and then tailing them off roughly in the interior to save the cost of cutting the beds, or of making an ashlar face with close joints, and filling behind it with rubble, or brickwork, has again and again, where a great weight has had to be carried, from the Middle Ages down, produced the same result. Many important buildings have been defaced or made insecure by the cracking and spalling which are the

result of this treatment, when the thick joints or loose masonry of the backing yield under pressure, and throw the weight on the neatly cut stones of the face. In this case there must be a peculiar aggravation for the legislature and commissioners in the fact that they did not entrust the care of the execution of the work to their architect, but provided a superintendent of their own, and, it is said, not only commanded the dome themselves, but in many ways interfered here and there so that it is doubtful where the responsibility for anything can be fixed.

A most phenomenal scheme for the suppression of fires has been brought forward in New York. It is proposed to build in the middle of the city a tower three hundred and fifty feet high, carrying a reservoir one hundred feet in diameter, to hold two million gallons of water. This water is to be held mainly for the needs of the Fire Department, but to be used also by the Board of Health for flushing sewers, washing streets, and the like. It is to be distributed all over the city by a special service of pipes, — necessarily, we may say, because its enormous pressure would work havoc with any ordinary system, — and let on to four thousand hydrants, so placed that no fire can occur more than four hundred feet from one of them, and that anywhere in the lower part and middle of the city twenty or thirty of them can be brought to bear upon one building with moderate lengths of hose. Each hydrant would deliver three 3-inch streams, and in case of an extraordinary fire two or three hundred such streams could be concentrated in a very small area, with force enough to throw them two hundred feet or so into the air, — enough to work considerable damage to crowds and firemen, at least, and probably to drown out almost any fire that could be got at. The water is to be pumped from the rivers by engines of a thousand collective horse-power. It is proposed to set up high columns or shafts of iron lattice near the highest buildings enclosing stand-pipes with hose couplings at different levels, so that the water may be delivered at once at the point where it is wanted.

We will not stop to examine the details of this tremendous proposition. It is claimed that they have all been worked out and that every part of the construction has been made a matter of computation. Almost any constructive scheme is possible nowadays if people will pay for it; but there is a choice of ways of spending money. For one fire that gets beyond control for want of water, there are ten that occur because faulty building encourages them, and prevents our getting at them when they might easily be smothered. To those people who dread the neighborhood of steam-boilers, or other distributors of imprisoned forces, there would be little comfort in knowing that eight thousand tons of water was suspended in a tank three hundred feet above their heads, or was straining at a network of pipes under their feet, with a pressure of one hundred and seventy pounds to the square inch; not an explosive force, certainly, but an unsleeping tension equal to half a dozen times the pressure in the boilers which they fear, backed by a flood ready to burst into their cellars with a velocity of perhaps a hundred feet in a second. What would be the cost of providing this flood we have not seen estimated, but it would certainly be enormous, many millions of dollars, which might be made more effective in other ways. This is a curious instance of a common propensity to spend lavishly upon cures, rather than make a reasonable provision for prevention. We are tempted to suggest as a more economical alternative that the city, instead of spending these millions on a possible deluge, should, after passing a rigorous fire-proof law, devote the money to paying insurance premiums on all the combustible buildings in the city; and then, — well, — let them burn.

What is to be the outcome of the many projects for the international ship canal? Where there is so much smoke there must be some fire; and no doubt if the canal was once built it would justify its existence as completely as the Suez Canal has done. But the difficulties in the way of all the proposed schemes are so great, and the comparative merits so nearly balanced, that capital has not yet gravitated to either of the two which are now most prominent, — the Nicaragua or Greytown and Brito project, in favor with Americans, and warmly supported by Admiral Ammen, and the San Miguel or Darien route, favored by the French, and lately surveyed by Lieutenant Wyse of the French navy, with the support of M. de Lesseps, the engineer of the Suez Canal, — nor is it easy for a layman to form any clear judgment. M. de Lesseps is now proposing to call an international conference, to meet in Paris in May and consider the question of routes; and Lieutenant Wyse is at Washington as the representative of his plans and the bearer of his invitations. Meanwhile, as we learn from *La Revue Industrielle*, another Frenchman, a M. Blanchet, who has lived long in Nicaragua, of how much authority we know not, comes forward with a proposition in favor of the Nicaraguan route, but proposes to avoid the cost and difficulty of cutting long canals and making the rivers Rio Grande and San Juan navigable by building huge dams across the two valleys near their mouths, so as to raise the waters of these rivers to the level of Lake Nicaragua, and make as it were a continuous lake stretching nearly from ocean to ocean, there being left only about thirty-five miles of the river canal, divided between the two ends, in which will be arranged the lockage necessary to ascend and descend between the level of the seas and that of the lake. By this means he proposes to avoid the most difficult constructions and make an enormous saving both of time and money.

MODERN CHURCH BUILDING. II.

A prominent modern mistake is in building churches too large. They must of course be limited in this respect to the means of the projectors: but, even supposing those means to be ample, there must be another restriction in the capacity of the human voice. A good speaker can be heard, under favorable circumstances, for a distance of thirty feet on each side, fifty feet in front of him, and twenty feet to the rear.[1] This would absolutely restrict the dimensions of a room for public speaking to about sixty feet square, most of the space behind the speaker being unavailable. Even with these dimensions, the corners would be useless for hearing. . . . . But it is not expedient for ordinary uses to count on acoustic conditions proving altogether favorable. Many preachers, of ability in other respects, are very deficient in elocutionary skill and power. In all public gatherings there is more or less confusion; and it is very annoying, and interferes greatly with one's profitable hearing, to have to listen intently in order to catch each word. If in addition the eye is strained in a dim light, or distracted by the glare and flicker of colored glass, in the effort to watch the speaker's expression, the comprehension of the words of holy admonition borders closely on barbaric torture.

For an oblong rectangular hall or church, free from obstructions to sound, and to be filled by one voice, the limit of size should be about forty-five feet by sixty, and the height should not exceed thirty feet. This allows for about ten feet behind the speaker, and nearly as much between the back row of seats and the wall. Such a room, without galleries, would seat comfortably in slips or pews about four hundred and fifty people; or in improved chairs with tilting seats, about five hundred. A well-proportioned room is likely, other things being favorable, to have good acoustic properties. An exact cube, great length in proportion to width, or great height in proportion to width and length, almost certainly indicate bad conditions for hearing.

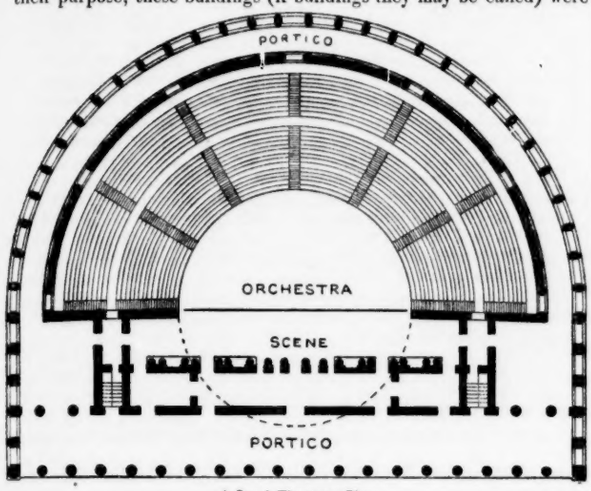
All extravagances of form, dimensions, or arrangement should be avoided. Absolutely smooth and flat walls and ceilings, and sharp corners, are unfavorable for sound. The former should be broken by moderate projections, and the latter should be cut off on straight or curved lines. Unnecessary window or skylight surface should be avoided, glass being a sound-reflector. Walls should be lined, in part at least, with material of moderate resonance, well-seasoned wood being the best for the purpose. Floors should be carpeted only where necessary to deaden sound. If there are no galleries, the pulpit or desk should be set high enough for the speaker to see the faces of the people in the rear row of seats over the heads of those in the next row in front. If there are galleries, he should stand enough higher to bring those in the rear rows of them into view. It would be better if the back seats on the floor could be raised, as it would add to the ease in both seeing and hearing. Seats should be placed to face as nearly towards the speaker as possible.

In addition to advantages of sound and sight, a room seating not over five hundred people is more readily heated, ventilated, and lighted than a larger one. A large church partially filled has a chilling and depressing effect, while a small one well filled satisfies that human love for near association and community, as essential in connection with religious as with other assemblages, and inspiring both to speaker and to hearer. Limitation in size also permits the church proper to be carried to a point of perfection in its various parts which shall make it every way worthy of its high uses. Money, instead of being lavished on worse than useless bulk, can be concentrated on the most thorough construction and the most tasteful adornment.

If for sufficient reasons, in any special case, it becomes necessary to increase the capacity of an auditorium, so that the greatest possible number can see and hear a single speaker within its walls, following out the course of reasoning already employed, we are almost obliged to adopt one form, and that is the general shape of the old

[1] These strike us as rather narrow limits. — Eds. American Architect.

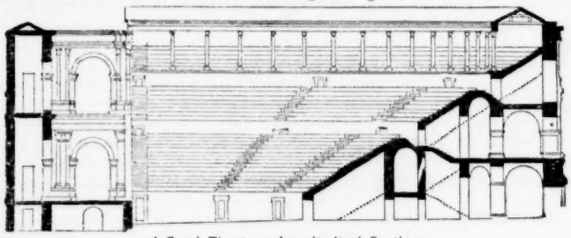
Greek theatre, or of a half amphitheatre. As it was unnecessary for their purpose, these buildings (if buildings they may be called) were



A Greek Theatre. Plan.

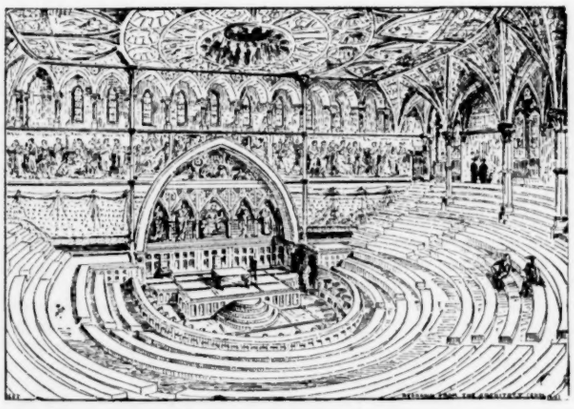
without roofs, and only partially walled. These deficiencies must be supplied and other changes made to suit modified uses and a different climate.

The plan would be semicircular, or nearly so, with the pulpit, rostrum, or reading-desk near the centre of what on the Greek plan was called the orchestra. The seats would rise one above another in concentric rows; the entrances being through them from corridors



A Greek Theatre. Longitudinal Section.

below, or down easy flights of steps in the aisles. In order, with this form, to seat a larger number, one or more shallow galleries may extend around the outer circumference. In case this form of auditorium were enclosed within a rectangular building, the triangular corners might be used for stairways to the galleries. As building on curved lines increases all items of expense very materially, it answers the purpose almost equally well to adopt for the form of the plan a half octagon or decagon. This has been adopted in the Sanders Theatre in the Memorial Hall at Cambridge, Mass.; and this or the curved form in various academic and other lecture-halls in Europe,



Speech Room, Harrow School.

almost invariably with success. It is an arrangement eminently well suited for the uses of the preacher, lecturer, singer, or actor. Without any irreverence, or any desire to attract attention by extravagant or radical statement, it may be safely said that any one who seriously and intelligently studies and investigates the public needs will find that, for the above purposes, one general form is equally well adapted.

It does not by any means follow that the church should closely resemble the theatre. It may be left to the idolatry of the "Gothic Revival" to force all buildings into the garb of a church, making the distinction between town hall, railroad station, and cathedral merely nominal.

The semicircular form of plan should be adopted only where its fitness is unimpeachable; and its style of treatment may be so varied as to be in every way appropriate to its intended service.

There is no one style in architecture that is suited more than another to religious uses. That a church should give the impression of being a church is undoubtedly true; but the effect should be produced by the absolute fitness of every part to the particular ceremonies for which it is intended.

Thus far our consideration has been confined to the part of a church used for the purposes of preaching, singing, and other devotional exercises. But modern customs require something more than this in the form of vestry, assembly rooms, or parish-parlors, study for the clergyman, and various other smaller rooms and offices. It is very common to unite these directly with the church proper, — in the basement, in an upper story, or in one or more stories at either end or side. This is often done as a matter of economy, to unite as much under one roof as practicable. But the economy is often more fancied than real. A detached or semi-detached building would often serve the purpose better, and could be treated more directly and successfully for its intended use than if made a part of the larger structure. This separation would also lessen the risk of destructive fire.

Although, as was said before, it is not proposed here to consider any matters of morality, except as they apply to people of all creeds and doctrines, the suggestion may still be in place that there is a considerable class, in nearly every denomination, who look upon the church itself as fitted only to be used for, and associated with, regular religious services; and it would be better, rather than that their feeling of sentiment, even if it be no more, should be carelessly disturbed, that the separate uses should be confined to different buildings. By adopting this system the house of worship could be made better and more beautiful in all ways; while the house for the church family could be equally well, and more simply and economically, fitted to another class of wants.

The only way to build a Protestant church of to-day is to build it singly, honestly, and skilfully for its tenants and their special requirements. Servile copyism can only lead to failure.

To quote from another: "There is every reason why our churches should be fitted for the destined use. It is not enough that they can be used, in spite of their inconvenience, for Protestant worship; they should be its visible counterpart and reflection. The great charm of good architecture everywhere lies in this, — that it expresses the aims and feelings of its founders; that centuries after they have passed away, it is still alive with their life, and every stone of it tells, in a universal language, what they loved, what they believed, and what they sought; . . . . can any one say that modern religious architecture is in like manner the reflex of modern religious thought? and can any one who thinks Protestantism worth living for, say why it should be unable to produce churches distinctively its own?"

J. A. F.

THE ILLUSTRATIONS.

THE HOLYOKE OPERA HOUSE, HOLYOKE, MASS. MR. C. S. LUCE, ARCHITECT, BOSTON.

THIS building was completed in March, 1878, at a cost of about $40,000. It measures 90 × 114 feet, and has a seating capacity of 1040. Built of brick and stone, with brick partition walls and four auditorium exits and two stage exits, an audience is perfectly secure, in case of fire. The acoustic properties are all that could be desired, and the width of the proscenium arch secures good points of sight throughout the house. All the appointments, scenery, stage contrivances, traps, and gas are of such a nature as to admit of the production of the most elaborate piece. The difference of architectural style in the exterior and interior is accounted for by the fact that the building is one of a group (published in the *American Architect*, March 16, 1878, and here shown by a smaller reproduction), and the exterior was influenced by the other building, which was commenced before the Opera House project had assumed form.

DESIGN FOR THE COMPLETION OF THE WASHINGTON MONUMENT. MR. H. R. SEARLE, ARCHITECT, WASHINGTON.

The base of the monument would be formed of three unequal pyramidal terraces, the lower one 20 feet high and 40 feet wide on the top; the second one 24 feet high and 30 feet wide; the third 30 feet high and 24 feet wide; the face of each terrace would be on a different angle, formed by a line from the under side of the cornice at the top of the shaft, touching the upper corner of the terrace, and extending down to the next level. The length of each front of the lower terrace would be about 250 feet. Above the upper terrace is a casing around the present shaft, four feet in thickness and 40 feet high. Above this again, at a proper distance, is a cornice above which the shaft is divided by deep grooves into what might be termed three pilasters, which extend up to the capital. This capital, including all its members, is 38 feet high, and has as a member a large flat cove 17 feet high, which is foliated, — the originals for the foliage being natural plants of the country. The upper member of this capital forms a balustrade. Above this the shaft finishes to a point, in the form of a pyramid, in overlapping sections, making the whole height of the monument, from the ground to the top, 530 feet. The face of the terraces at the

base would be built of buttresses of massive blocks of rock-faced granite, in courses about four feet high each; between these buttresses are sandstone panels 20 feet by 12 feet, on which may be cut in the future bas-reliefs, illustrating scenes in the life of Washington. On the upper terrace, facing east, would be a colossal statue of Washington, about 22 feet in height. Over each buttress in the face of the terraces the cornice carries a post or pedestal, the corner ones being from eight to six feet square, the larger ones on the lower terrace and the smaller on the upper one; and on these corner pedestals it is designed to place colossal groups of statuary. The other pedestals could be used for single statues. The top of each terrace would be formed by means of heavy wrought-iron girders and brick arches. The lower portion of the walls of the second and third terraces would offer thousands of superficial feet for tablets, grouping of tombs, and memorials of men and deeds connected with the past and future of this nation. The ventilation of this interior would be provided for by the hollow casing of the shaft above the upper terrace, in the cornice of which would be openings for the escape of air; ingress to the interior of the terraces would be had by a doorway under the first flight of steps. On the inside of the shaft would be an iron stairway composed of straight runs, and to every four flights, making a rise of about 50 feet, would be a gallery entirely around the inside of the shaft. In the well could be placed two steam elevators. The upper portion of the interior of the shaft would be lighted by windows, which would be placed in the channels before described as dividing the shaft into three pilasters.

HOUSE FOR PROFESSOR SLOANE, PRINCETON, N. J. MR. CHARLES EDWARDS, ARCHITECT, PRINCETON, N. J.

This house is built of a local stone. Tiles are inserted in the gables.

CORRESPONDENCE.

ST. ALBAN'S CATHEDRAL.

London.

The Abbey — now Cathedral — Church of St. Alban's is fast becoming as famous in the present as it was wont to be in the past ages of its history. After a long interregnum of quietness it has suddenly burst into notoriety again. The reason is one which has before now wakened up many a slumbering, not to say mouldering old pile, the bogey restoration! It is being restored, — that is enough to waken up anything, even the original designers themselves, and all the host of fellows who have tampered with it since.

For the benefit of such of our readers as have not the advantage of a personal knowledge of the famous old church, it may not be out of place to give a brief description of its present condition.

It is a very old place; commenced by Abbot Paul, of Caen, at the end of the eleventh century, with bricks and tiles from the old Roman city of Verulam, it has been added to and altered in nearly every age since, till it presents a medley of all styles and modes of building, scarcely any of which can fairly claim the highest rank as examples of their respective dates. There are some notable exceptions to this, of course; it would be very surprising if there were not; but such is about the rule throughout, and the result is a building more interesting from an historical or archæological, than from an architectural point of view; not that there is by any means little for the architect to study; on the contrary, the place is a perfect mine of information of all sorts and dates. Under the hands of its numerous builders, St. Alban's has been so spun out that it has the reputation at least of being, with the single exception of Winchester, the longest church in England, some five hundred and fifty feet from east to west, though we are afraid it must be added that it is about the plainest of the great churches bequeathed to us from the Middle Ages.

To begin at the west end, it has an abnormally long nave (this time *the* longest in England), with side aisles, approached by triple porches in the west wall, of which the central one only is open, the side ones being at present blocked up from the outside.

The nave has thirteen bays, four of which on the north side (shown in the view published in your issue of 29th June last) and five on the south side, are Early English; five more on the south side are Decorated, or Middle Pointed; the rest are Norman of the plainest possible type. Then we have the central tower, the transepts, and the choir of five bays, with its side aisles. These central parts are the most ancient, the choir having been reconstructed, however, in the fourteenth century. Its three westernmost bays are devoted to the choir proper; the remaining couple of bays eastward, and separated from the others by a magnificent fifteenth century screen, are called the "Saint's Chapel," from the shrine of St. Alban erected here. The high altar is placed against the western side of the screen just mentioned. To the eastward of the Saint's Chapel, and opening from it by three pointed arches (now walled up), is the lady-chapel, with its ante-chapel, built during the fourteenth century: thus far in the way of the plan.

Externally it presents a monotonous appearance, long and low, relieved only by the mass of the grand old central tower, but having few or no architectural features of any great merit. The walls are of brick and tiles, or stone and flint, according to the dates of their construction. The windows generally are poor in design, those of the Norman period being simply holes in the brickwork; the tracery of the later work is generally weak in detail.

The original high-pitched roofs are all gone, and the structure has the appearance of being roofless. The parapets are built of brick of the commonest description, and the west front is in the most wretched condition. Of its three portals, which Sir G. G. Scott declared must have been amongst the most perfect work of their kind in England, the central only is open, but in a half-ruined state. Above is a great fifteenth century window filling the whole breadth of the nave. It has been proposed to restore this front as a memorial to Sir Gilbert Scott, and certainly it is high time something was done. Almost anything would be better than its present condition a standing disgrace to all connected with the historic old church.

The central tower is a splendid piece of old brickwork; perhaps it is more building than architecture, so little is there of the beauty of ornament about it. It is grand from its mass, and interesting from its age. It is said to have been surmounted in the thirteenth century by an octagonal lantern of timber, and it is mooted that this feature may yet be replaced.

Internally, the central and oldest parts of the church are plain, even to baldness; the bricks are covered with cement which has once been highly decorated in colors. Indeed, the glory of St. Alban's seems to have been its colored interior. Many interesting pictures and patches of decoration have been reclaimed from beneath the whitewash; columns, walls, and arches, all seem to have been painted, and, to judge from what remains, very well painted too. The thirteenth and fourteenth century bays of the nave are very good, with some excellent detail in the triforia. The nave and transepts have flat ceilings covered with decoration, said to have been painted in the fifteenth century or thereabouts, in imitation of much older work. Whether this is so or not, the whole affair is most execrable, both in design and color, utterly unworthy all the fuss that has lately been made over it. The choir is groined in wood, with fourteenth century painted decoration of considerable interest. The lady-chapel and ante-chapel are good fourteenth century work, and present many pleasing features; but they are all under repair, and, when the walled-up arches leading from the choir are opened out again, will afford one of the best views in the interior.

There are several very fine monuments, particularly in the Saint's Chapel, in the centre of which, on its old site, stands what remains of St. Alban's shrine, re-erected in the most skilful manner by Sir Gilbert Scott, from the fragments found in the building. It must have been a most magnificent work of art, as also the shrine of his friend and fellow-martyr, Amphibalus, the remains of which stand in the centre of the ante-chapel. To the north of St. Alban's shrine is a splendid watching-loft, of great interest, both from its design and execution.

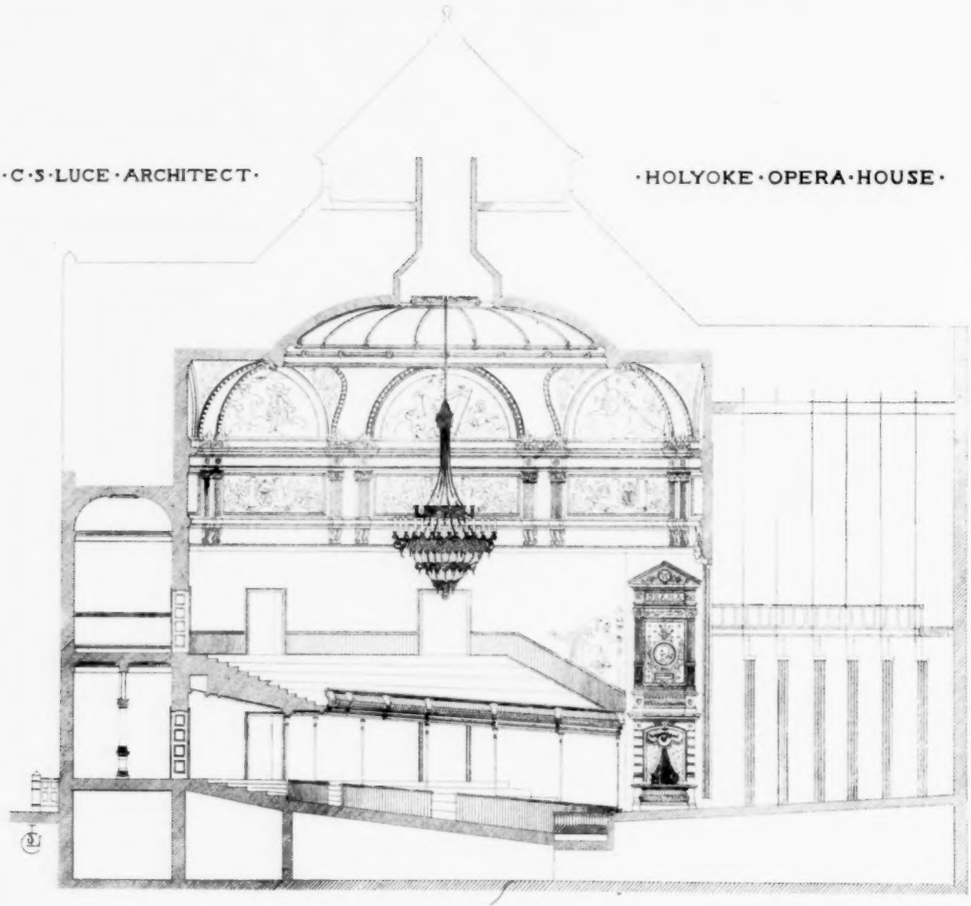
Such is a brief outline of the church as it at present exists. Now let us see what has been done and what is proposed in the way of so-called restoration.

Passing over the work of Mr. Cottingham in the south transept, etc., about the year 1832, we come to the first work of Sir Gilbert Scott, some thirty years later, and find that he materially improved the north side, re-roofed the north aisle, and restored the buttresses of the choir aisle; he also cleaned off the plaster-work from the outside of the tower, and had the brickwork pointed down. Then the choir paving and steps were renewed, the north transept roof and ceiling repaired, and an ancient doorway and superstructure rebuilt in the choir from the fragments found in a Norman doorway in the wall. The central portions of the church having been thus put in order, Sir Gilbert then undertook the restoration of the western portion of the nave, and particularly the straightening up of the Early English piers and clerestory on the south side, which had got some foot or so out of the perpendicular. This was effected with the greatest skill, and the restoration of the north and south clerestories, as well as the parapets of this portion, has also been finished. It must be presumed Sir Gilbert had good authority for all he has done here in the way of rebuilding; but if the corbel-table of the parapet is taken from an old one, it must have been of very poor character. It is Early English in design, but looks exceedingly weak in detail, as seen from below. The work on the clerestories and parapets seems to be finished for the present, and ends where the thirteenth century work joins on to the Norman on the north and the Decorated on the south side. The south aisle for a corresponding length has also been repaired, new buttresses built, and covered with a high, sloping roof. Internally, this portion of the aisle is now being vaulted in stone. The clerestory walls and parapets are of stone; but the aisle walling and buttresses are faced with flint, having stone finish. The old public passage-way through the ante-chapel has been stopped up, thus restoring the lady-chapel to the interior. Both chapels are now undergoing most extensive repairs, of which it is almost too early to speak.

Thus far the work had progressed when the death of Sir Gilbert Scott deprived St. Alban's of the most skilful architect and careful restorer it had seen for many a long year. Probably no one will contend that everything he did was just right and no more. It is an old story now with what bitter opposition his work was received by the anti-restorationists, more particularly, perhaps, his treatment of the tower in clearing away the plaster from the face of the brickwork; how they contrived to worry him, and how bravely he defended what had been done; that is all as nothing compared to the storm

·C·S·LUCE·ARCHITECT·

·HOLYOKE·OPERA·HOUSE·



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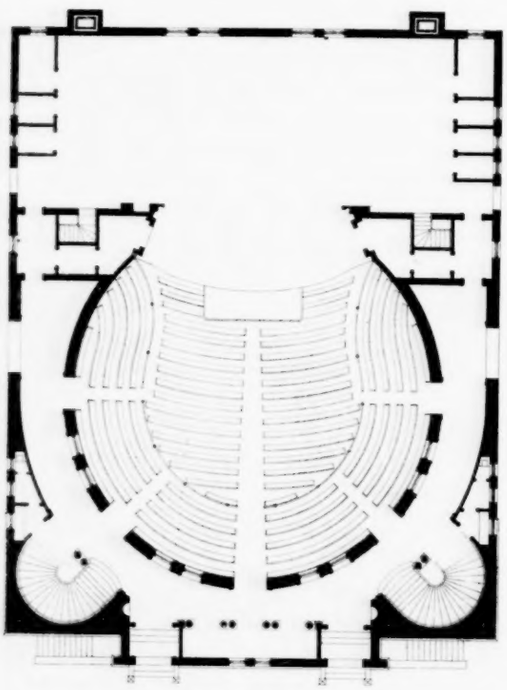

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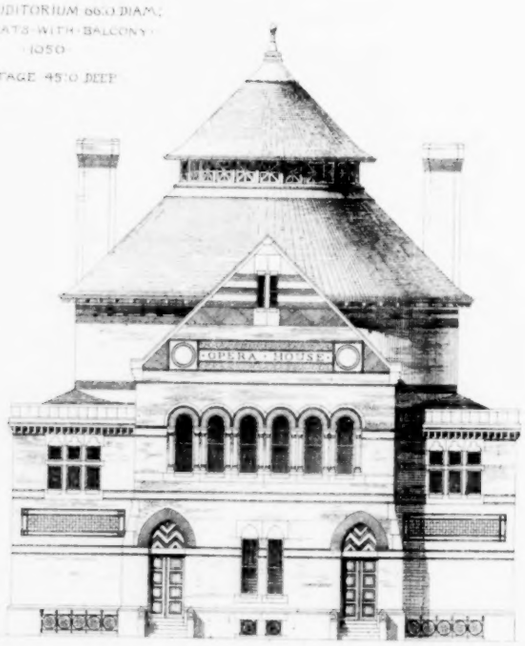

·FRONT·ELEVATION·

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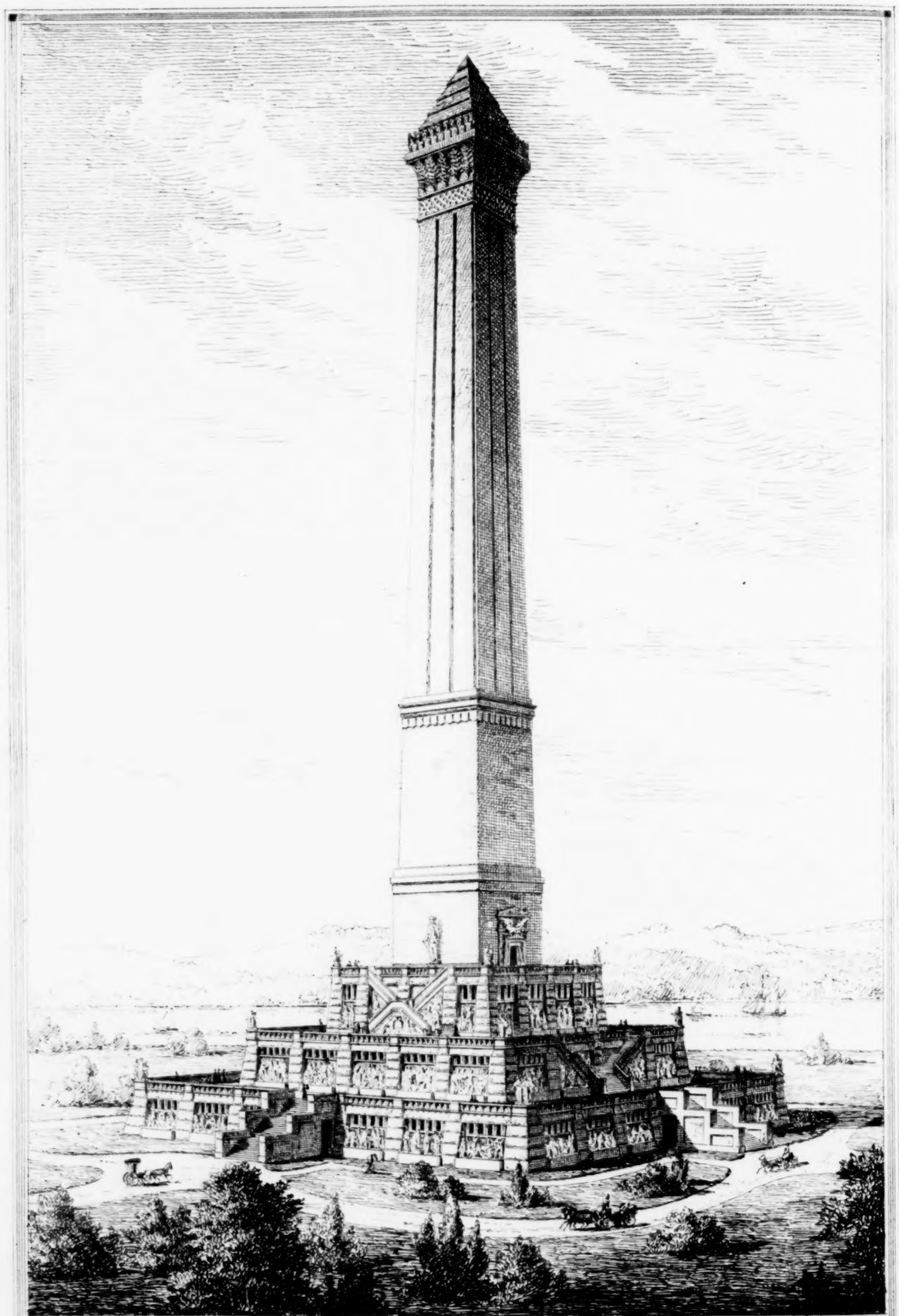

DESIGN FOR THE WASHINGTON MONUMENT

H.R. SEARLE, ARCH'T.

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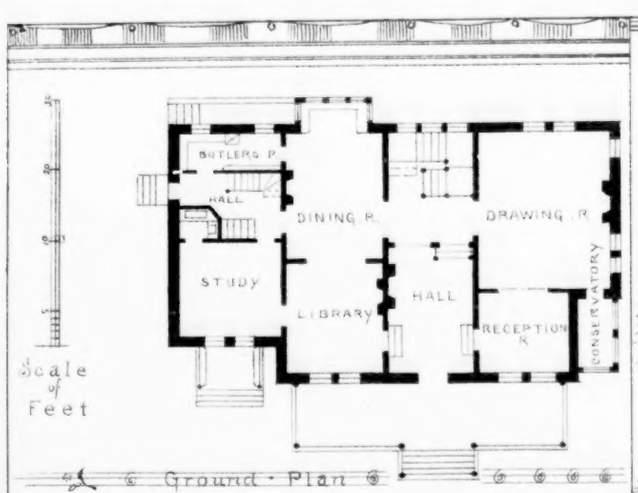
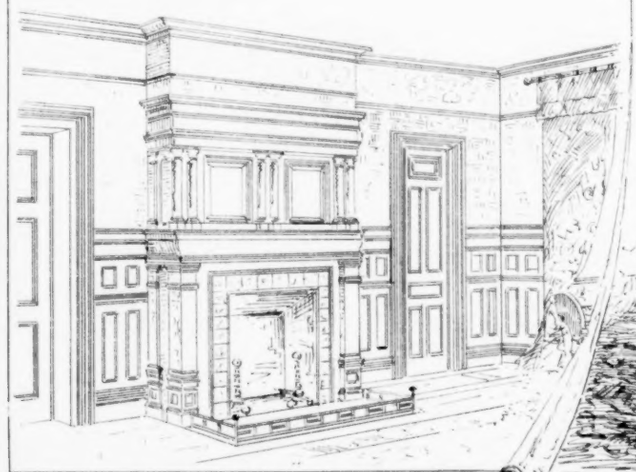


House at Princeton, N.J.

for Prof. Sloane.



C. Edwards, Arch't.

THE HECTOTYPE PRINTING CO. 125 DEVONSHIRE ST. BOSTON

DETAILS
HOLYOKE OPERA HOUSE

MUSICAL TROPHY
RIGHT STANDEL

C.B. LOCKE ARCHITECT

that has arisen since. The weight of his name and high reputation as an architect generally managed to keep things working smoothly; but no sooner is he in his grave and the work he left unfinished consigned to the hands of his sons, George Gilbert and John Oldrid Scott, and their first new proposal made known, than the whole world of amateurs, antiquaries, and, we are sorry to add, some leading members of their own profession, are up in arms, and a controversy has been raging for months past, and all about what? A proposal to cover the nave of St. Alban's with a high-pitched roof! The subscribers and their committees held meetings, discussed and re-discussed the subject, and finally upheld the designs of their architects. The Society of Antiquaries and the Institute of British Architects took it up, sent down representatives to inspect, made reports, and held more meetings. Amateurs and everybody who thought he had a word to say about the matter rushed into print, wrote letters to the *Times*, and more letters to the professional journals; it has even got the length of the quarterlies; straws were split on what the exact pitch of the old roof must have been; hot arguments were urged for and against the question of the parapets. The grand old tower would be shorn of its noble proportions. If the nave gets a high roof it must have a new western gable, and the transepts must follow suit. The beautiful (!) old painted ceiling would be sacrificed, the whole church utterly spoiled, and so on *ad infinitum*. Now, apart from the archæological questions of whether there were ever two steep roofs over the nave or only one, and the exact pitches thereof, the greater question remains behind, What will be the effect of the high roof on the general design of the cathedral? If any unprejudiced person will go down to St. Alban's and carefully study the matter on the spot, we humbly think he can come to but one conclusion, namely, that artistically speaking it would really be a vast improvement. If there is one church more than another which needs height, it is St. Alban's. It is all low and squat, and lacking the dignity the additional height would give it. This particularly applies to the west end, which sadly needs the gable it once possessed. What then becomes of all the talk of spoiling the church and destroying the proportions of the tower? The original design had a high-pitched roof, so either the authors of it knew what they were about or they did not, and presuming (as we have a right to do) that they did, then the church they designed for a high roof must be held to be incomplete without such a feature, and the tower against which it abutted can never present the proportions originally intended until the roof is there again. Whether the new roof comes down with eaves on to a corbel-table, or finishes behind a parapet, is after all really a secondary matter. The parapets are there now, and we have seen high-pitched roofs behind parapets before this without thinking the combination a monstrosity, besides which they help the needed height of the walls. Then as regards the interior, the flat roof itself, as far as its timbers are concerned, is nothing very remarkable after all. As for the painted ceiling, which it has now been decided to retain, anything more utterly vulgar and commonplace can hardly be conceived. It has been taken down from the western half of the nave, now under repair, and the effect of the open roof timbers, as seen from below, is worth acres of the bedaubed boards which covered them up from view.

That it became necessary in some measure to appease the opposition to the new roof by making a compromise to retain this wretched ceiling is a most melancholy instance of misguided artistic philanthropy, — a great cry over very little wool.

If a high-pitched roof would be a manifest improvement to St. Alban's, and even Mr. Street is understood to admit this much, why should it not have one? Can any one declare, who has seen it, that to rescue the west front, with its three beautiful porches, from its present disgraceful condition, would be an artistic crime? Or is it that the architects are unequal to the task? No one has ever hinted at such a thing. It is very well known that Sir Gilbert's sons, by both training and natural gifts, stand in the front rank among the artists of their profession.

Restoration or rebuilding, call it which you like, has been the rule, rather than otherwise, at St. Alban's all its days; the mediæval builders here as elsewhere showed their usual disregard for the work of their immediate predecessors. They pulled down, added to, or altered, as seemed right in their own eyes, in the most unscrupulous fashion. What did John de Cella care for the old Norman west front he pulled down to make way for his Early English façade? or what again mattered de Cella's work to Trumpington when his innings came? Just nothing at all, if it did not suit their purpose; and yet there is a general outcry because two highly-accomplished artists propose to give St. Alban's back its high-pitched roof, and replace the hideous brickwork of its west front with a decent elevation, while restoring its ruined porches. Surely they had, at all events, a right to expect their professional brethren would not interfere with their clients and try to thwart their intentions by something which looks very like an attempt to coerce them into an opposite course of action. The Anti-Restoration Society, with its crowd of noisy amateurs, might go so far, or even farther; but it comes with rather a bad grace from architects with whom restoration forms no inconsiderable part of their practice. Depend upon it, the fuss has been altogether overdone. It is time the dispute over the true pitch of the old roof should cease, as it is fast becoming neither a very edifying nor a very creditable spectacle, and that the whole matter should be allowed to settle itself; the work could not be in better hands, even if they were Mr. Street's or Mr. Neale's.

THE TENEMENT-HOUSE COMPETITION.

NEW YORK.

THE past few weeks have been rich in exhibitions of various kinds. The water-color exhibition at the Academy of Design is especially interesting this year, and the exhibition of works in black and white at Kurtz's Gallery is a very good one. But the one that has the greatest interest for the architectural mind is the exhibition of the drawings of the competition for a model tenement-house, of which the *American Architect* has already given some account.

It is easy to see that many of the drawings, a majority, perhaps, are the work of inexperienced or immature designers; but in spite of that, the drawings as a whole are interesting, and there is no question that the organizers of the scheme have been doing an excellent work and deserve the thanks, not only of the profession, but of the public at large. Our present tenement system is known to be a disgrace to the community, and any steps towards freeing us from the evils of the past deserves encouragement, — and this competition will place before the public many of the data necessary to intelligent action in the construction of future tenements. Landlords will learn not only how they can improve on the methods now in vogue, but about how much they will have to spend on such improvements, besides many interesting details of arrangement, construction, ventilation, or plumbing.

The conditions being extremely limited, the different designs necessarily fall into three or four categories, and there is very little work outside of these categories worthy of being considered. These categories are, roughly: 1st. Building over the entire lot (except a small yard at the rear) and depending for light and ventilation of inner rooms and stairs on wells or shafts.

2d. Leaving a narrow alley on one side and getting light and air from this alley.

3d. Having suites of rooms front and back, with stairs in the centre and a court each side of stairs.

4th. Having an area or court at one side, with stairs in the centre of the building and open to the air, and access to the suites either by open-air galleries or by an interior corridor.

There are a few good plans that do not fall into one or another of these divisions.

We might mention one *Nutshell* who seems to have an excellent idea not sufficiently developed, and puts the staircase between two courts not opposite each other. Had the staircase been made open to the air, thus connecting the two courts, it would have given a disposition very favorable for light, ventilation, and privacy of suites with publicity of entrance.

All plans giving less than four suites to a floor it seems safe to discard, also all plans with more than one staircase. But beyond this point it is very difficult to decide, for it becomes a question of compromise between the natural desire of the landlord to utilize and make rentable the space, and his humanity and consideration for the welfare of his tenants. How many square feet of land can we reasonably ask the landlord to turn into court, or what is to him waste space? According as this question is answered by the committee will the awards be given in one or the other of the above-named categories. To us it seems unquestionable that the fourth category, with side area, open staircase, galleries of communication and an entrance from the street which cannot be closed with solid doors, offers the greatest advantage to the landlord that is compatible with a proper regard for the tenants.

Among the plans that seem to be carefully and intelligently worked out we noticed *Luz*, with square court in centre, and stairs connecting with suites by means of bridges. The plumbing and ventilating seemed well considered.

Octagon, with stairs in centre and area each side, one run of stairs takes one to the level of first floor rear, next run to first floor front, and so on, each pair of suites thus having a landing to themselves.

Your kind consideration, No. 6. Excellent plan, side court, central stairs, and good arrangements in detail.

Pro bono publico, No. 57. Well studied, but not air and light enough. Would recommend itself more strongly to the owner than to the tenant.

Pro bono publico, No. 16. *The Poor.*

All the above mentioned have points of excellence. B. W.

NEW WORK. — MR. HATFIELD'S DEATH. — THE STEWART MEMORIAL CATHEDRAL.

NEW YORK.

THE dulness and stagnation which for so many seasons past have prevailed in the offices of the architects here seem to be passing away, and in not a few places visited brisk activity and hurry show the preparation for spring. There are few large commissions to be given out, but with the talk of building on all sides, and the few important buildings which must fall into somebody's hands for design, the outlook is undoubtedly improving. In the city there is a large building trade, with very little of architecture about it. The rapid transit extension to the upper river limit of the city has brought into possible use a great tract of territory, and speculators and builders are in a ferment to get it covered. Tenement houses are being rushed up, here and there an apartment house, with just enough of those conveniences for housekeeping *en suite* to justify the name,

while in many places the oft-repeated demand for small, single tenant houses has led owners to build some houses of this grade.

The "plum" of the opening season has been the house about to be built for Cornelius Vanderbilt, on the northwest corner of Fifty-seventh Street and Fifth Avenue. This has fallen to Mr. G. B. Post, after a lively competition, in which several of our prominent architects took part. Messrs. Harney, Clinton, Snook, and Hatch, were in it, with perhaps a few others, but the last man in proved to be the first man out, and Mr. Post again comes to the front with a design which he will no doubt make over and over again, until the completed building and the winning competition design possess only the most general resemblance. His Historical Society building in Brooklyn is pushing on, and Boston is furnishing some very ambitious details in terra-cotta, after his designs.

The coming events which are casting their shadows with more or less distinctness before are, 1st, the Club House for the Union League Club, that body having resolved to leave the old Jerome mansion, at Twenty-sixth Street and Madison Avenue, and move up on Fifth Avenue into a grand club house to be built on a piece of leased land; and 2d, the new Chamber of Commerce building, which is to go upon the site of the old Post Office, on Nassau Street. A bill before Congress authorizing the transfer stands a fair prospect of a passage, and the chamber is ready to go to work at once on its long cherished plan of piling up a great Exchange in the business heart of the city. With the sweeping away of the old Dutch Church, the metropolis will lose one of its few ante-revolutionary buildings, but modern New York will get another great pile of architectural pretension and perhaps of artistic merit.

A sad event of the week has been the death of Mr. R. G. Hatfield, whose passing away was as sudden as it was generally regretted by his brothers in the profession. His death leaves an important vacancy on the committee at present busied on the examination of the plans sent in for the tenement-house competition. Mr. Hatfield had been laboring very busily at this, and it may have in some measure hastened his demise, through his over-anxiety to do the most conscientious work. Mr. Renwick, it is believed, will take his place on the committee. There seems little prospect now that any decision will be reached by the committee of award until March, and it may be possibly the middle of that month before the name of the successful architect is made known.

One of the most interesting buildings now going up under the direction of a New York architect is the Stewart Memorial Church, at Garden City, which Mr. H. G. Harrison is carrying out in an old-fashioned, painstaking way, designing everything by his own hand. One corner of his atelier has the look of a pottery, in its masses of wet modelling clay, where busy artists build up gargoyles and groups of foliage, finials, and bosses. Already several cart-loads of models tell of his diligence; but in the free luxuriance of Gothic forms there are thousands of opportunities for the modeller's skill and taste. When $75,000 can be spent on a single room in material and labor, some notion may be formed of the character of the work on the building as a whole. The pavement of the church is to be of polished marble, principally of imported varieties, while the slender metal columns are soon to have their casing of real bronze, inlaid or pointed with gold, thus making, certainly, a unique and brilliant finish and securing to every worshipper on the floor a view of the altar. The capitals are to be of bronze, as well. The work about the chancel is to be of the richest. There will be sixteen sedilia or seats about the chancel, while out in the choir will be additional accommodation, giving the cathedral, if need be, the opportunity for the most sumptuous ecclesiastical displays. The whole structure, when finished, would need a volume to describe it; and Judge Hilton will leave his work but half completed if he fails to publish an illustrated monograph on the building. Then, instead of being the ornament of an unpicturesque Long Island hamlet, the Stewart Memorial Cathedral, with its crypt, the finest in America, will become a work of art known through two continents. W.

ENGLISH AND CONTINENTAL ART.

The Paris Universal Exhibition of 1878 has left, in many respects, a more definite and decided impression on the public mind of the cultivated world than that of 1867. It is not too much to say, that for the first time in the history of the world we are able to observe the formation of a cosmopolitan public opinion in matters of art. Previous universal exhibitions had not produced this result. They had led rather to a sense of the incompatibility of national opinions. In 1855 English painting had been regarded, not only by Parisians, but by other Continental visitors, as a singular curiosity, intensely interesting as a manifestation of insular peculiarity; and Englishmen wandered amongst Continental pictures with a strong sense of their entirely foreign character. In the London Exhibition of 1862, and at Paris in 1867, this feeling of exceeding strangeness had in part passed away, but it had not yet given place to any cordial international interchange of opinion out of which a cosmopolitan public opinion might take its rise. In 1867 the feeling in Paris about English art was mainly one of disappointment. The first freshness of sensation occasioned by mere novelty had passed away. English painters were no longer looked upon as highly interesting barbarians; but, on the other hand, Continental criticism had not yet begun to feel any real sympathy for English art. Our own countrymen did not feel themselves in such a strange world amongst Continental pictures as in 1855; they had become familiar with Continental art in the interval; but still the sentiment of nationality was too powerful to be overcome by any broader and more tolerant sentiment. In 1878 two changes in public opinion have been distinctly visible. The first is, that people of different nations often had the same opinions about the schools of Europe; or in other words, that a public international opinion formed itself; and the second is, that the differences of nationality have not produced any sentiment of narrow-minded disdain, but rather a desire to preserve them as sources of freshness and variety, which are very likely to be lost in a near future. The difference between French opinion of English art twenty years ago and now is that the French used to laugh at our painting for its eccentricity, whereas now they think it desirable that its originality should be preserved; and the best Continental criticism generally has become so much more tolerant and enlightened, that the old prejudice against English art, once universal, not only in France, but all over the Continent of Europe, has given way to a respectful interest, and, in many cases, to a hearty approbation. English painters, on their part, have undoubtedly, as a body, made an advance in the direction of what is good in the Continental schools, and that without sacrificing their special superiorities. Their painting is much less crude and glaring than it used to be, but it is still as interesting as ever it was in subject and invention. The cosmopolitan opinion, which has been formed during the Exhibition of 1878, has been so decidedly favorable to English painting, that we hope to see English pictures admitted into Continental galleries much more generally than the old prejudice against them ever permitted in past times. It is not too much to say that a few years ago a traveller might visit nearly all the public and private galleries of the Continent without seeing a single English picture. Our present impression is that English painters have done well to learn what they have learned from their Continental contemporaries, but that the movement has gone far enough in that direction; and that the important matter now is to keep what is best in their own nationality. There still remain in France some survivors of the old school of criticism, to whom English art can never be much better than a barbarian invader, a Vandal within the walls of the Eternal City, and M. Charles Blanc is one of them. "Every island," he says, "is an individual on the globe, and its isolation prevents it from being familiarized with general ideas, and from being accessible to the sentiment of generic forms, two things which are essentially Continental." Now we venture to observe that although Great Britain is an island geographically, it is really less an island intellectually than France is. An Englishman is not very accessible to foreign ideas, and he seldom knows a foreign language well; but he is somewhat less shut up in his own nationality than a Frenchman. M. Charles Blanc affirms that "style" can never be insular. It is curious at this time of day to hear an old gentleman gravely discoursing about such an exploded superstition as *le style*, the old set recipe for painting Raphaelesque works, and Michaelangelesque works, without the genius of Raphael and Michael Angelo. Style, in its true and living sense, is very various, and exists abundantly amongst the better painters of the English school. It is really nothing but idealization, without which art falls to the ground at once, and becomes mere colored photography; but as artists are differently constituted, their ideals are different. For example, M. Charles Blanc was himself greatly struck by Mr. Burne Jones's picture of "Merlin and Vivien." "*Il y a là*," he says, "*une quintessence d'idéal, une poésie sublime qui m'apprehende au cœur. La Viviane du peintre semble évoquée par une sorte d'incantation: on dirait d'une figure de Mantegna qui serait retouchée et amoureusement enveloppée par le pinceau d'un Prud'hon, Le spectateur est séduit par la charmeuse, et c'est elle qui enchante l'enchanteur.*" In other words, the French critic is delighted with the English painter's style, though, as it is not the regular classicism of the drawing-school, he does not call it style, but *poésie sublime* and *quintessence d'idéal*. Again, he admits that there are *beaux portraits* in the English school, as if it were possible to produce a *beau portrait* without style. So narrow is M. Charles Blanc's view of the subject that he denies style to Rembrandt and Rubens, who, however, "replaced it by genius."

True style is individual, and it was interesting in the Paris Exhibition to see how many forms it assumed. It seems to us very desirable that this variety should be preserved; so desirable, indeed, that although the style of Mr. Burne Jones did not enchant us so much as it enchanted M. Charles Blanc, we should be sorry to see him sacrifice his individuality. His art is, as all art should be, a real emanation from his mind, and yet at the same time its strong personality includes what seem to us to be two errors or affectations, the wilful choice of morbid complexions and countenances, and the preference of bad form to good because it looks more original. There can be no necessity to give everybody a pale face and a goitred neck. Even Vivien, though her face is pretty, is not really a good figure, as we should see more plainly if she were undraped. The coloring of the picture is sickly throughout; but this, we presume, is part of the intention, as Merlin himself is like one dying under the spell of the enchantress. It was a curious result of the greater sobriety of recent painters that the works of John Lewis seemed strangely crude in this exhibition, whereas ten years and twenty years ago this had been much less visible. The fine qualities of the "Courtyard of a Coptic Patriarch" still held their own, but the "Commentator on

the Koran" and the "Midday Meal" suggested a wish that the painter had not introduced so many colors, the raw blue-greens being especially objectionable. Mr. Millais had a very important exhibition, occupying nearly the whole of one wall. It is scarcely possible for the same person to like all Mr. Millais's pictures equally, simply because he is an artist of wide range; but they are always interesting. The artist was, in fact, his own rival, as the author of "Waverley" is the dangerous rival of the "Last Minstrel." Judges equally competent preferred one or another of Millais's pictures, but all agreed in considering his exhibition interesting and important, and the broad result of it is a great extension of his Continental reputation. The "Beefeater" was wonderfully popular, and so were the little girls, the "Sisters." Of the two landscapes, "Over the Hills and Far Away" was, we believe, generally preferred to "Chill October," partly on account of the monotony of the reedy foreground in the latter, though Continental critics were of course astonished by the (perfectly true) intensity of the Highland color in "Over the Hills."

The contrast between English and Italian painting was strongly felt by every one. The English seem to have happily got out of the crude stage; the Italians are in it, and in the very middle of it. It is almost incredible that the modern Italian painters inhabit the country which owes half its fame to illustrious masters of past times, but the truth is that they have begun, to borrow Emerson's phrase, "with no past at their back." Finding nothing in the old art corresponding with their modern needs, they have begun the whole art again from nature; and crudity is an inevitable consequence of this. After the first shock of astonishment at a kind of painting which sets the teeth on edge, we discover considerable keenness of observation and lightness of touch; in short, the qualities which help a young artist to make minutely faithful studies. In some of the Italian painters, in Michetti, for example, there is what seems at first sight an intolerable and unpardonable affectation; but it may be that the painter has been aiming at certain visual results, which are not to be attained in the ordinary, straightforward manner of painting. The early manner of De Nittis was a good example of what modern Italian methods can do to render the truth of nature; but his more recently developed style of painting is much less minutely curious, and betrays rather the desire to get the work finished and have done with it, than the delicate caressing of a favorite subject. His color, too, which in dealing with Southern sunshine was fresh and clear, is now purposely dirtied in dealing with London. Of all the Italian painters, the least offensive, either through glare or by dulness, was certainly Pasini; but he was familiar to us already, and the prevailing tendencies of the present Italian school were not so familiar. It is passing through an unpleasant youthful phase at present, and especially lacks the mellowness of ripened art; but if we take it for what it really is, — a new school born on old ground, and not a degenerate old school, for it is not that, — we shall see reasons to be hopeful. There is every probability that modern Italian painting will come to good, in due course of time.

The influence of French painters on other Continental schools is remarkable, but no artists have felt it more, for good or for evil, than the Americans. As represented at the Paris Exhibition they were, with few exceptions, little more than an additional regiment belonging obviously to the great French army of artists.[1] This is the more to be regretted that the Americans are now, as a body, quite sufficiently well educated in art to go on without the help of foreign instruction. There ought, of course, to be good public galleries in America, but with those, and a sound system of instruction in the United States themselves, it is probable that a really original American school would very soon form itself and gain a fresh strength of its own quite independently of Europe.

We have not space to speak of sculpture; and the English school holds so poor a rank in Europe that it is not an encouraging subject. France, by Governmental encouragement and natural talent, holds easily the first place. As for Italy, we can only regret that the patronage of buyers has turned naturally able men into a false direction, making them nothing but amusing and dexterous carvers, and not sculptors in the higher sense. One general observation strikes us, and that is the extreme difficulty of carrying art into really new directions. There were scarcely more than two or three real novelties in the whole exhibition, such as the vulgar pictures of Verlat and some Italian crudities, for Fortuny and his school have no longer novelty to recommend them. The moral is, that if we are to enjoy art at all, in these days, it must be simply by finding our pleasure in what is good, without seeking for new sensations. — *P. G. Hamerton, in the Portfolio.*

TWO POPULAR ARCHITECTS.

[We print the essential parts of a letter concerning two architects who have lately died in New York. It was written for another use, but will be of interest to our readers.]

I AM inclined to give Mr. Thomas more credit for public-spirited intentions than has been sometimes given. I had a conversation with him two or three years ago, in which he showed a good deal of what seemed to me to be sincere feeling on the subject of the influence he had exerted, or supposed himself to have exerted, on the public taste. He overrated immensely the value of popular criticism on current art, and accepted without reserve his success in "getting orders from the most respectable and solid members of the community," as the test of artistic success; but his citations, arguments, and whole manner betokened a genuine conviction that his labors had been altogether on the side of, in his eyes, "the finest architecture the world has ever produced," namely, the Renaissance. He contrasted his productions with the street façades of forty years ago with some vehemence, but with no small degree of discrimination; while he evidently appreciated and keenly felt the inroads on his prestige of the rising generation of trained architects. At the same time, he showed less bitterness than might have been expected, and I got the impression that, though he felt his only safety was in the grammar of the Renaissance, he recognized the merits of "advanced work," and was not altogether blind to the beauties of even "Queen Anne." On the whole, I can readily believe what I have heard since his death, that it was not only the tragical end of his two sons, and only children, but this appreciation of his waning professional popularity, which largely contributed to the shadow over his later years.

I may add, with reference to the juxtaposition, which I have seen, of Mr. Thomas's name with that of another prominent practitioner whom a portion of the public agreed to adopt as an architect, that so far as their productions, and the influence of those productions on the public taste, are concerned, it seems fair enough to class Mr. Thomas and Mr. Kellum together; but so far as each in his functions as an architect was concerned, I should myself feel disposed to give much the higher rank to the former. Mr. Thomas himself designed what he built, or if he could not, with his extensive practice, find time to inspire the production of all the detail, he was capable of doing so, and probably, in his oversight of his assistants' drawing-boards, virtually did design most of what bore his name, — whatever that was worth in either fees or fame. On the other hand, Mr. Kellum — to whom as a boy, he being still a journeyman carpenter, though even then a gray-haired man, I used, at his solicitation, to teach the difference between (*e. g.*) a Roman and a mediæval arch, or a Doric and an Ionic column — did not know how to handle a pencil with less than say a half-inch breadth of lead, was entirely dependent on his assistants for design as well as draughtsmanship, and never, I think, for a moment regarded his latter-day vocation as other than a trade by which to make money — particularly where large iron contracts were concerned — out of wealthy people who fancied themselves architectural amateurs, and found comfort in playing the *rôle* of art-patron to one whose mental and educational equipments, being inferior to their own, prevented any jar to their *amour propre*. Nevertheless, in several of the last conversations I had with him, when he was, for the second time, after a lapse of years, knocking very hard at the doors of the Institute of Architects for admission, I found him as regards the more prominent of his city buildings, by no means averse to appropriating all the glory he could command. But even this, it struck me, arose rather from a perception of the money value of professional reputation than from a genuine pride in it, *per se*.

A. J. B.

PUBLICATIONS RECEIVED.

ANNUAL REPORT OF THE MINISTER OF PUBLIC WORKS for the fiscal year, 1st July, 1877, to 30th June, 1878, on the works under his control. Submitted in accordance with the provisions of the Act Thirty-first, Victoria, Chapter Twelve, Section Nineteen. Printed by order of the House of Commons, Ottawa, 1879.

THE TRANSACTIONS OF THE ROYAL INSTITUTE OF BRITISH ARCHITECTS FOR 1878-79. Six numbers, containing: 1. Opening Address by Charles Barry, F. S. A., President; 2. The High Sanctuary at Jerusalem, by Claude R. Conder, Lieutenant R. E; 3. Discussion on Lieutenant Conder's Paper; 4. Remains of Buildings in Midian, by Captain R. F. Burton; 5. Discussion on Captain Burton's Paper: also, The Modern Restaurant, by Thomas Verity, Fellow; 6. Notes on St. Paul's Cathedral, by F. C. Penrose, M. A., Past Vice-President.

NOTES OF EXPERIENCE AND INEXPERIENCE.

3. FURNACE HOT-AIR PIPES — Give the cold air in your exposed room a chance to escape, so that there will be room for the hot air to enter and refill, and not use radiation of hot air only from register as at present, after the air within the room is warmed, for if the room is full of air, it can't, by its own force, be made any fuller. Put a cold air escape as near the floor as possible and connect the same with some smoke flue.

EXPERIENCE.

3. FURNACE HOT-AIR PIPES. — I notice one of your correspondents requests information on the subject of hot-air furnaces. There is but one way possible to draw his heat to the exposure quoted. If he can devise such ventilating flue in said room as will secure him a positive exhaust, he can warm the room, when the direction of the wind is not against him.

J. H. STEDMAN.

3. FURNACE HOT-AIR PIPES. — The case mentioned by "Hot Air" in the *American Architect* for February 15 is a hard one to deal with. It is very difficult to force hot air from a furnace into an exposed room on the northwest of a house when the wind blows from that quarter, as it always does in the coldest weather. The only way to ensure it is to make it easier for the air to reach the room by placing the furnace as nearly under it or by providing larger or straighter pipes than to the other rooms; and this is a thing

[1] They deserve, of course, much more detailed mention than this brief allusion, many of them being really excellent painters, and the present writer hopes to do them better justice in the *International Review*.

to be always taken into account in fixing the position of a furnace and in arranging the hot-air pipes. If the current to the room will maintain itself it may of course be established by temporarily closing the other registers, and opening the door of the room will probably favor it. If there is any considerable rise in the pipe the current may be assisted by cutting a door into the bottom of it and setting in a lighted lamp till the room gets warm. To introduce the screw (unless with a motive power, like a fan) would only make matters worse, for there is nothing but the ascending current to give motion to the screw, which therefore is only an obstruction. The Archimedean or screw ventilator is a contrivance that does no great honor to its godfather. The wind which turns the revolving cap, and by that the screw, would ordinarily have more effect in increasing the draught by simple friction across the open chimney-top. If there is no wind, the apparatus is a mere obstacle to the rising air, which not only has to force its way up, but is obliged to turn the screw in order to get out. As a protection against down-draughts it is inferior to a cowl; without a wind the theory on which it ventilates is that on which a man lifts himself by the straps of his boots. P. L.

4. Chimney Flues. — "Tyro" will find that to secure a good draught the chimney should be of sufficient size, should be carried up above surrounding objects, should be as straight as possible throughout its length, and should be as smooth as possible inside, to avoid friction. As a draught is caused by unequal temperatures, the chimney should be so arranged as to avoid a rapid radiation of heat. If in an exterior wall there should be at least eight inches of brickwork between the flue and the exterior surface. For country houses it is much better to have the chimneys run up through the interior, as the flue is more easily kept warm, and the heat that is radiated helps to warm the house. The most frequent cause of a "smoky chimney" is the insufficient size of the flue for the grate or fireplace connected therewith. The flue should not be less than one eighth the capacity of the square of the width and height of the grate or fireplace. That is, if the grate has a front opening 20 inches wide and 26 inches high, the flue should be 8 in. x 8 in.; or, with an opening 36 inches wide, and 32 inches high, the flue should be 12 in. x 12 in.; and, to get the best result, the opening into the flue from the grate or fireplace should be of a less number of square inches than the square of the flue, and never larger, as no more air should be admitted at the inlet than can be carried through the flue. Where there is more than one inlet to the same flue, the sum of all the inlets should not more than equal the size of the flue. A number of stoves may be connected with the same flue, one above another, if this rule is observed. A *square* flue is better than a narrow one, as in two flues containing the same number of square inches, the square flue would have the smallest amount of wall-surface, and consequently less friction for the ascending currents, and less absorption of heat by the walls. Chimneys should be closely built, having no cracks nor openings through which external air may be drawn to weaken the draught. If they could be made throughout their length as impervious to air as a tube of glass, with interior surface as smooth, one cause of smoky chimneys would be removed. A downward current of air is frequently caused by some contiguous object higher than the chimney, against which the wind strikes. This higher object may sometimes be quite a distance from the chimney, and still affect it badly. A good chimney-top constructed to prevent a down draught will remedy this difficulty. Each grate or fireplace should have a flue to itself. Under very favorable conditions, two grates or fireplaces might be connected with the same flue, but it is not a good plan. We have known grates and fireplaces connected with two flues, where they have been built under a window for instance, and, owing to there being insufficient room for a flue of suitable size, a flue has been run up on each side of the window. This is a very bad plan, and never can work well; it requires too much heat to warm both flues, and if the room in which the grate or fireplace is situated should be pretty close, so that there was no other entrance for air, there is danger that it would circulate down one flue and up the other, forcing smoke out of the fireplace into the room. W. H. Jackson & Co.

8. Stucco-Work Moulds. — What proportion of beeswax and resin do I want to use to make moulds for moulding stucco-work, and what kinds? If there is any other ingredient, please inform me in your column of experience, etc., and oblige, "Stucco."

9. Old Materials. — What is the accepted usage as to the disposal of old materials in a case of repairs and alterations? Do they belong to the proprietor of the building or to the builder making the repairs? Does a clause in a specification directing the builder to use in the new building such portions of the old as may prove suitable, constitute him the owner of the old material not so used? Rubbish.

NOTES AND CLIPPINGS.

The Saratoga Monument. — In our issue for November 3, 1877, we commented on the design of the monument which the Saratoga Monument Association proposes to build to commemorate the surrender of Burgoyne's army. We do not know just what progress has been made, and possibly nothing more than the laying of the corner-stone, in October, 1877, has been accomplished. At all events, interest in the project languishes, and the society is in need of funds to carry out its undertaking, and has at length been driven to adopt the plan of petitioning the legislatures of the thirteen original States for an appropriation of one thousand dollars from each. The legislatures have taken as yet no definite steps, but it is understood that those of Connecticut, Rhode Island, and South Carolina are willing to make the appropriation asked for.

The "Builder" and its Editor. — In the last number of the *Builder* Mr. George Godwin, its editor, in speaking of the coincidence of the number of the journal with that of the present year, says, "Of those 1879 weekly numbers which constitute the present life of the *Builder*, 1781 have been produced and issued under the direct personal care and supervision of the present conductor." Those who are familiar with the *Builder*, and at the same time have any inkling of the complex and multifarious duties which devolve upon an editor, can best realize how ably the onerous task has been discharged.

Rocking Piers. — A novel construction has been recently described in *Engineering* as having been employed in the Dysdale Viaduct, on the railroad from Christiania and Fredrikshald, carrying a single rail over the Dyse brook. These rocking piers for viaducts are intended to protect the structure from the effects of expansion and contraction, due to alterations of temperature. The piers which support the superstructure are of wrought-iron, with lattice-work webs. In the longitudinal direction of the viaduct, which is some 603 feet in length, there is only a single column between each span, possessing no stability in itself, and the upper end is allowed to move along with the superstructure when the latter expands and contracts. The lower end of each pier rests on a hinged shoe, so that breaking strains are avoided, and the load is always rendered central to the pier columns. The movement of iron work in a longitudinal direction is transferred to one abutment on which are the necessary bed plates, provided with rollers; on the other the superstructure is kept in place by a fixed shoe. With this arrangement, it is stated that no special expansion-joint in the rails is necessary, as the sleepers and platforms are quite independent of the expansion and contraction of the ironwork.

A New Tunnel. — A despatch from Geneva says that the contractor for the St. Gothard Railway tunnel is treating with a group of French financiers to pierce the Simplon.

The German National Monument. — The *Academy* says that the Munich Foundry has been entrusted with the casting of the German National Monument, which is to be erected in the Niederwald, close to Bingen on the Rhine. The monument has been designed by Professor Schilling, of Dresden. On a pedestal, twenty-four metres high, is to stand a figure of Germania pointing with uplifted hand to the symbol of German unity, the imperial crown. The figure, which is to be thirty metres high, is considered a triumph of German plastic art. The model is to be carried shortly to Munich, and will there be put together for casting. The cost of the monument will amount to 1,100,000 marks, which has been provided for, save a balance of 350,000 marks, which is to be gathered by a special collection made in each German town.

The Beacon of Lavezzi. — "The Beacon of Lavezzi," says the London *Times*, "which stands near the middle of the Straits of Bonifacio, between Corsica and Sardinia, has a curious history. There is here a very dangerous submarine rock reaching from about two metres below the surface down to six metres; its form is, roughly, that of a truncated cylinder. There being no tides in the Mediterranean, this rock of Lavezzi is never uncovered. (The island of Lavezzi is a little to the north.) In 1855 a frigate, La Semillante, carrying troops from Toulon to the Crimea, was wrecked here in a violent storm, and not one of the 743 souls on board was saved. An obelisk on the island commemorates the event. Previously a light-house had been erected by the Sardinian Government on the island of Razzoli, which is a few kilometres E. S. E. of the rock. After the catastrophe a huge iron buoy was stationed at the rock, carrying a strong bronze bell, and a pyramid with six mirrors to reflect the rays of the sun and neighboring light-houses. Sometimes the roar of the waves even drowned the bell; and in one storm the buoy was wrecked on the rock which it was placed to warn against. It was resolved to raise a beacon on the rock, and this was done in 1869, a foundation of beton having been fixed in position with the aid of a caisson, and reaching a little above the surface. A system of lighting the locality, soon after adopted by the Italian and French Governments, was of the following character: The Razzoli light-house was arranged to throw a beam of red light (having an angle of 7 degrees) towards the Lavezzi beacon, *i. e.*, westwards, while another light-house on the south of the island of Lavezzi threw southward towards the beacon a sector of red light of 80 degrees (it threw at the same time a green sector northwards on rocks near Corsica). Thus, after March, 1874, mariners knew that so long as they saw both light-houses giving white light they were sufficiently clear of the rock; but whenever both gave red they were in its immediate neighborhood. Victory seemed complete till in 1875, after a severe storm, it was seen with dismay that the beacon was gone. A buoy was temporarily put in position, and reconstruction was soon proceeded with, but in a new way. It was decided to have a beton base strengthened with iron bars penetrating the rock. The beton was built up by divers round 12 iron pipes placed vertically on the rock, and through these pipes the boring tools were passed into the rock, penetrating to a depth of one metre. The mason divers generally remained down about two hours, and they were armed with bronze poniards (steel being corroded by sea water) against sharks and gigantic cephalopods which haunt that region. The holes having been bored, thick iron bars were introduced and cemented, penetrating the rock on the one hand, and the beton on the other. The tower built on the foundation thus acquired was finished on the 14th of September, 1877. It rises seven metres above the water, and is painted with horizontal bands of black and red alternately, which is understood to indicate that ships may pass on either side. It has a balustrade on the top to afford refuge in case of shipwreck, which will now, it is hoped, be rare."

The Virtue of a Water-Seal Trap. — Mr. James Mactear, says Mr. W. P. Buchan, sanitary engineer, has been making careful experiments with water-seal traps, at the St. Rollox Chemical Works, England, of which he is the managing partner. He has found no difficulty in getting gases to pass through the water, but has failed up to this time in all attempts to cause ferment germs to pass through the water. This difference in viability of the gaseous and germ molecules is attributed to the greater size of the latter, which are thereby disenabled from passing between the spaces formed between the molecules of water. At any rate these experiments seem to show that, after all, there may possibly be more protection in a water-seal trap than is usually believed nowadays.

A Brick-Lined Tank. — The *Metal Worker* says that some years since Professor Chandler, President of the New York Board of Health, built a tank which was not only serviceable but cheap. He had made of stout plank a large box carefully braced, and lined it with bricks each one of which was dipped in melted coal-tar just before it was laid in place, the coal-tar serving instead of mortar. A thin coat of this substance was spread over the inside, which made the tank thoroughly water-tight.